

Adam Geremek, Mark W. Greenlee & Svein Magnussen (eds.)(2014): Perception beyond Gestalt: Progress in vision research. London/New York: Psychology Press. ISBN 978-0-415-65801-0. 207 pages, £ 90.

This book is intended as a *Festschrift* on the occasion of the 75th birthday of Lothar Spillmann, eminent visual experimentalist in the tradition of Gestalt psychology, who has done influential work in integrating phenomenological, psychophysical, and neurophysiological findings in his quest for a Neo-Gestalt neuroscience. Spillmann's laboratory has attracted a large number of psychophysicists and experimental psychologists from some of the finest universities, who came to Freiburg during the years from 1971 – 2005, and their work has enhanced our knowledge of visual perception. The book reflects the depth and breadth of the approach chosen by his laboratory, namely the emphasis on the neurophysiological correlations of visual perception.

Spillmann's laboratory was a mandatory stopover point for countless international visitors. It organized the first European Conference of Visual Perception, now the second most important conference of its kind, issued 5 books, among them *The Foundations of Visual Perception* (7 500 copies sold) and two translations into English of classical Gestalt works, published some 200 experimental papers in high-profile journals <www.lothar-spillmann.de/Lothar_Spillmann/Welcome.html> and played host to over 350 seminars at the Department of Neurology (Prof. Richard Jung, director). It can rightly be said that the Freiburg laboratory played a pivotal role in reinstating visual psychophysics in the country of its origin.

The editors of the book assembled 13 chapters from some of Spillmann's closest collaborators, who went on to become researchers in their own right. If the title suggests that Gestalt psychology is obsolete and that we must go beyond it, one only needs to look at the table of contents. The individual chapters demonstrate that the legacy of Gestalt is very much alive, although in a different context, and that the various perspectives discussed offer many viable paths for future psychological research.

The book is organized in three parts: (i) Gestalt and perceptual organization, (ii) attention, after-effects, and illusions, (iii) colour vision and art illusion. Phenomenological and psychophysiological papers are presented side-by-side.

The first paper (actually the 2nd chapter after the Introduction), by Johan Wagemans, asks "How much of Gestalt theory has survived a century of neuroscience". It is worth mentioning that in 2012 Johan Wagemans (together with 12 other experts) published in the *Psychological Bulletin* a two-part review that analyses a century of Gestalt psychology, surely the most important experimental and theoretical analysis of Gestaltism in the last few decades. Here

Wagemans notes that, after the rejection of Köhler's brain field theory and the discoveries of cortical receptive fields by Hubel and Wiesel, there is a renewed interest in holistic approaches to visual perception.

The second paper, by James P. Thomas, is an analysis, mainly historical, of Spillmann's concept of "perceptive fields", the psychophysical analogue of receptive fields. This analysis individuates a "symbolic relationship" between complex perceptual phenomena and neural mechanisms that act as mediators of such phenomena.

The third paper, by Bruno G. Breitmeyer, investigates the dynamics of the factors that define the units of perception. According to Breitmeyer, there are parallel channels for the processing of the surface and of the contours of a perceptual object, and the union of contour and surface emerge only at a conscious level. A limitation of the *Gestalttheorie* was to confine itself to conscious vision.

In the fourth paper, Baingio Pinna (who was awarded the Metzger award in 2010) asks the simpler and yet more difficult question in perception: what is a visual object and what is its meaning? According to Pinna, to answer one has to consider grouping, shape and meaning in an integrated way that takes into account experimental phenomenology, neural circuitry and biology of vision.

The last paper of the first part, by Lewis Harvey and Eric Schmidt, develops a model of the perceptual field as a vector field, devised in the early '90s by Stadler, Kruse, Richter and Pfaff. The results are highly suggestive, indicating that the most important factor is the role of the contour. As the authors note, "it is exciting to realize that the revolution started by the Gestalt psychologists has maintained its freshness and vigour" (p. 78).

The sixth paper, by Haluk Öğmen and Michael H. Herzog, faces the great problem of the enormous amount of information impinging on the visual system, and the subsequent need to operate a selection process. According to the authors, the Gestalt factors of grouping and common fate play a key role in this selection.

The following chapter, by Mark W. Greenlee and Svein Magnussen, analyses spatial adaptation, considered a sort of psychophysical microelectrode to probe human vision. The chapter is too dense to be summarized in a few lines. Particularly interesting is the criticism of some simplistic applications of the Fourier theory to vision, and more generally the reference to the importance of the figural after-effects, extensively studied by Gestalt psychologists in the years immediately after WWII.

Kai Hamburger, Erica L. Dixon, and Arthur G. Shapiro are the authors of the eighth paper, on the Hermann grid and the related Spillmann-Levine illusion. The relevant variable is the condition of spatial filtering. It is interesting, here,

on the one hand, the assumption that this is a privileged field for a Gestalt neuroscience; and on the other hand, the recourse to von Ehrenfels' principle of *Übersummativität* (1890).

Simone Gori and Alan Stubbs close this second part with a paper on motion illusions, that is, static figures that appear to move, considered as "a non-invasive window into the neurobiology of our visual system" (p. 140). The research in this field suggests that they are the result of the activity of hierarchically organized cerebral areas.

The third part begins with a chapter by Arne Valberg on the history of the theories of colour, beginning with the famous controversy between Helmholtz and Hering. This fascinating paper describes some two centuries of research, on man as well as primates.

Birgitta Dresch-Langley and Adam Reeves are the authors of the next paper, that tackles the problems of colour and the relationship between figure and ground. According to the authors, the colour "qualia" are Gestalt factors, and they analyse their interaction with the articulation figure-ground.

Frédéric Devinck, Baingio Pinna and John S. Werner treat in their paper the problem of chromatic contrast and colour assimilation in art and perception, seen from a phenomenological as well as a neurophysiological perspective. They conclude that we still lack a comprehensive theory of both phenomena.

The book ends with a chapter by Julian Kalmann, Jürgen Schramme and Christa Neumeyer on Goethe's coloured shadows in art and animals, e.g., goldfish and honeybees. The authors note that an induction of vivid colours makes the surrounding ones, unsaturated, appear almost white. This demonstrates a mechanism of colour constancy.

The editors are to be complimented for having assembled a timely account of contemporary research related to Gestalt issues from the viewpoint of phenomenology, psychophysics, single cell neurophysiology, and art. This book is an important one as it inspires research that overcomes the borders between disciplines, and the papers here collected will surely be read and quoted in future scholarly work.

It is deplorable that the highly visible and interactive Freiburg vision laboratory with its exquisite instrumentation was discontinued in favour of a neuro-computational centre, but there is hope that Gestalt research will be continued in other places, including the Far East, where Spillmann took up teaching students. I highly recommend *Perception beyond Gestalt* to everyone interested in the current progress of visual perception research. Gestalt research aiming at visual observations and empirical research of the brain as a whole will go on.

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